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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,870	10/12/2006	Alan Edward Litke	LC-509/PCT/US	5885
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EXAMINER PEPTONE, MICHAEL F				
ART UNIT		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/599,870

Applicant(s)

LITKE ET AL.

Examiner

MICHAEL PEPITONE

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 6-14, 20, 21 and 25-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-14, 20, 21 and 25-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB08)
Paper No(s)/Mail Date 6/22/07, 5/13/08
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ ~~Notice of Informal Patent Application~~
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6-14, and 20-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Kang *et al.* (US 6,265,061).

Regarding claims 1-2, 6-9: Kang *et al.* teaches an abrasion resistant coating (abstract) comprising a ceramer containing (4:14-40) containing pentaerythritol triacrylate (PETA) (28:1-29:26); a colloidal silica having an average particle size of 20 nm {NALCO 2327} [instant claims 2, 7-9] (28:50-29:26); and a photoinitiator which absorbs in the range of 180-400 nm (below 333 nm) {IRGACURE 184 (1-hydroxy-cyclohexyl-1-phenyl-ketone)} [instant claims 6] (29:5-8).

The Office realizes that all the claimed effects or physical properties are not positively stated by the reference. However, the reference teaches all of the claimed reagents and was prepared under similar conditions. Therefore, the claimed effects and physical properties, i.e. the coating being capable of maintaining about 95% of its post-cure gloss when subjected to about 100 cycles of grade 3 steel wool with a load of about 50 lbs [instant claim 1], would inherently be achieved by a composition with all the claimed ingredients. If it is the applicants' position that this would not be the case: (1) evidence would need to be presented to support applicant's

position; and (2) it would be the examiner's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties and effects with only the claimed ingredients.

Regarding claim 3: Kang *et al.* teaches pentaerythritol tetra(meth)acrylate (19:27-54) {substitute for pentaerythritol triacrylate (PETA)}.

Regarding claim 10: Kang *et al.* teaches about 35% silica (28:50-29:8).

Regarding claims 11-12: Kang *et al.* teaches N,N-dimethylacrylamide (28:11; 29:65-30:12).

Regarding claims 13-14: Kang *et al.* teaches stabilizers {phenothiazine} (21:55-61; 28:62) including ozone stabilizers (22:12-24); thermal stabilizers/antioxidants (22:25-43); UV stabilizers (21:62-22:11; 28:30-44) such as hindered amine light stabilizers (Table 1).

Regarding claim 20: Kang *et al.* teaches a preferred embodiment containing about 63% silica by wt% PETA (28:50-29:8), however, the ceramer could contain 10 to 100 parts binder per 100 parts by weight colloid {including liquid (sol)}, wherein the colloid contains about 2 to about 50 wt% colloidal inorganic oxide in the sol {corresponding to 2% to 500% solid inorganic oxide per wt binder} {as calculated by examiner (7:39-63)}.

Regarding claim 21: Kang *et al.* teaches trimethylolpropane tri(meth)acrylate (19:27-54) {substitute for pentaerythritol triacrylate (PETA)} (28:1-29:26) in an amount of about 49 wt%; and N,N-dimethylacrylamide in an amount of about 14 wt% {as calculated by examiner} (28:11; 29:65-30:12).

Claims 25-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Kang *et al.* (US 6,265,061).

Regarding claims 25-26: Kang *et al.* teaches an abrasion resistant coating (abstract) comprising a ceramer containing (4:14-40) containing pentaerythritol triacrylate (PETA) (28:1-29:26); a colloidal silica having an average particle size of 20 nm {NALCO 2327} (28:50-29:26); and a photoinitiator which absorbs in the range of 180-400 nm (below 333 nm) {IRGACURE 184 (1-hydroxy-cyclohexyl-1-phenyl-ketone)} (29:5-8); and N,N-dimethylacrylamide {reactive diluent} (28:11; 29:65-30:12).

The Office realizes that all the claimed effects or physical properties are not positively stated by the reference. However, the reference teaches all of the claimed reagents and was prepared under similar conditions. Therefore, the claimed effects and physical properties, i.e. the coating being capable of maintaining about 95% of its post-cure gloss when subjected to about 100 cycles of grade 3 steel wool with a load of about 50 lbs [instant claim 26], would inherently be achieved by a composition with all the claimed ingredients. If it is the applicants' position that this would not be the case: (1) evidence would need to be presented to support applicant's position; and (2) it would be the examiner's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties and effects with only the claimed ingredients.

Claim 27 is rejected under 35 U.S.C. 102(b) as being anticipated by Kang *et al.* (US 6,265,061).

Regarding claim 27: Kang *et al.* teaches a retroreflective sheet {road reflector} (34:44-63) coated with an abrasion resistant coating (abstract) comprising a ceramer containing (4:14-40) containing pentaerythritol triacrylate (PETA) (28:1-29:26); a colloidal silica having an average particle size of 20 nm {NALCO 2327} (28:50-29:26); and a photoinitiator which absorbs in the range of 180-400 nm (below 333 nm) {IRGACURE 184 (1-hydroxy-cyclohexyl-1-phenyl-ketone)} (29:5-8).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 6, 9, 11, 13-14, and 20 are rejected under 35 U.S.C. 102(a) as being anticipated by Perrine *et al.* (US 2003/0194549).

Claims 1-3, 6, 9, 11, 13-14, and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Perrine *et al.* (US 2003/0194549).

Regarding claims 1-2: Perrine *et al.* teaches an abrasion resistant coating (abstract, ¶ 1) comprising a curable (meth)acrylate (¶ 25, 39, Table 1); an inorganic filler having a particle size of 40 nm {AEROSIL OX50 silica} (¶ 13, 39, Tables 1, 3); and a photoinitiator which absorbs in the range of 180-400 nm (¶ 26-27) {Darocur 1173 (2-hydroxy-2-methyl-1-phenyl-propan-1-one)} (¶ 39).

The Office realizes that all the claimed effects or physical properties are not positively stated by the reference. However, the reference teaches all of the claimed reagents and was prepared under similar conditions. Therefore, the claimed effects and physical properties, i.e. the coating being capable of maintaining about 95% of its post-cure gloss when subjected to about 100 cycles of grade 3 steel wool with a load of about 50 lbs, would inherently be achieved by a composition with all the claimed ingredients. If it is the applicants' position that this would not be the case: (1) evidence would need to be presented to support applicant's position; and (2) it would be the examiner's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties and effects with only the claimed ingredients.

Regarding claim 3: Perrine *et al.* teaches urethane acrylate (¶ 25, 39, Table 1).

Regarding claim 6: Perrine *et al.* teaches {Darocur 1173 (2-hydroxy-2-methyl-1-phenylpropan-1-one)} (¶ 26-27, 39).

Regarding claim 9: Perrine *et al.* teaches an inorganic filler having a particle size of 25-35 nm {DK100} (¶ 13, 39, Table 1), and an inorganic filler having a particle size of 40 nm {AEROSIL OX50 silica} (¶ 13, 39, Tables 1, 3).

Regarding claim 11: Perrine *et al.* teaches ditrimethylol propane tetracrylate and tripropylene glycol diacrylate {reactive diluents} (¶ 39, Table 1).

Regarding claims 13-14: Perrine *et al.* teaches photosensitizers {benzophenone}; UV stabilizers {hydrophenyl triazines}; and hindered amine light stabilizers (¶ 27, Table 1).

Regarding claim 20: Perrine *et al.* teaches an inorganic filler having a particle size of 25-35 nm {DK100} (¶ 13, 39, Table 1), and an inorganic filler having a particle size of 40 nm

{AEROSIL OX50 silica} (¶ 13, 39, Table 1) in an amount of 0.6 wt% {substituted for Cabosil M-5} and ethoxyethoxy ethyl acrylate in an amount of 1.4 wt%, corresponding to about 43 wt% of silica per ethoxyethoxy ethyl acrylate {as calculated by examiner} (¶ 46, Table 4, coating C).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Perrine *et al.* (US 2003/0194549) as applied to claim 9 above.

Regarding claim 10: Perrine *et al.* teaches the basic claimed composition [as set forth above with respect to claim 9], wherein up to 35 wt% of silica can be added (¶ 30).

Perrine *et al.* does not disclose a specific embodiment containing up to 35 wt% silica. However, at the time of invention a person of ordinary skill in the art would have found it obvious to have utilized up to 35 wt% silica based on the invention of Perrine *et al.*, and would have been motivated to do so since Perrine *et al.* suggests that the amount of silica should be added to the composition in order to impart a desired level of abrasion resistance, with a general trend of a higher concentration of particles, the greater the abrasion resistance (§ 30).

Claims 12 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perrine *et al.* (US 2003/0194549) as applied to claim 11 above, in further view of Ha *et al.* (US 2002/0032251).

Regarding claims 12 and 21: Perrine *et al.* teaches the basic claimed composition [as set forth above with respect to claim 11], wherein N-vinyl-2-pyrrolidone is used as a reactive diluent in an amount of 10.9 wt%; and tripropylene glycol diacrylate is used in an amount of 11.8 wt% (§ 39, 46, Tables 1 and 4).

Perrine *et al.* does not disclose N,N-dimethylacrylamide as a reactive diluent [instant claims 11 and 21] or trimethylolpropane triacrylate [instant claim 21]. However, Ha *et al.* teaches a UV-curable acrylate based composition (§ 14-20) containing reactive diluents such as N-vinylpyrrolidone and N,N-dimethylacrylamide (§ 72-76); tripropylene glycol diacrylate, and trimethylolpropane triacrylate. Perrine *et al.* and Ha *et al.* are analogous art because they are concerned with a similar technical difficulty, namely the preparation of UV-curable acrylate based composition containing reactive diluents. At the time of invention a person of ordinary skill in the art would have found it obvious to have combined N,N-dimethylacrylamide and

trimethylolpropane triacrylate, as taught by Ha *et al.* in the invention of Perrine *et al.*, and would have been motivated to do so since Ha *et al.* suggests that N,N-dimethylacrylamide and N-vinylpyrrolidone are equivalent reactive diluents (§ 72-76); and trimethylolpropane triacrylate and tripropylene glycol diacrylate are equivalent reactive diluents (§88).

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Perrine *et al.* (US 2003/0194549).

Regarding claim 27: Perrine *et al.* teaches an abrasion resistant coating (abstract, ¶ 1) comprising a curable (meth)acrylate (¶ 25, 39, Table 1); an inorganic filler having a particle size of 40 nm {AEROSIL OX50 silica} (¶ 13, 39, Tables 1, 3); and a photoinitiator which absorbs in the range of 180-400 nm (¶ 26-27) {Darocur 1173 (2-hydroxy-2-methyl-1-phenyl-propan-1-one)} (¶ 39); wherein the abrasion resistance coating can be applied to a variety of substrates including wood, plastics, ceramic, metal, and glass (¶ 31).

Perrine *et al.* does not disclose a specific embodiment having the abrasion resistance coating applied to a road reflector. However, at the time of invention a person of ordinary skill in the art would have found it obvious to have coated the abrasion resistance coating on at least one surface of a road reflector based on the invention of Perrine *et al.*, and would have been motivated to do so since Perrine *et al.* suggests that the abrasion resistance coating can be applied to a variety of substrates including wood, plastics, ceramic, metal, and glass (¶ 31).

The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. See attached form PTO-892.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL PEPITONE whose telephone number is (571)270-3299. The examiner can normally be reached on M-F, 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on 571-272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/
Supervisory Patent Examiner, Art Unit 1796

MFP
23-April-09